

Know the Dangers of Silo Gases

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Drought conditions this summer and hot weather in July and August have led to a buildup of nitrates in corn plants prior to harvest. Add in rainfall later in the season and around harvest and these conditions lead to potential high gas levels in silos.

What is Silo gas?

Silo gas is nitrogen dioxide, an extremely toxic, yellowish-brown gas, with bleach like odor. The formation of silo gas is a naturally occurring process and is necessary during the fermentation processes as oxygen combines with nitrates in plant materials resulting in the production of nitric oxide gas. This combines with oxygen in the environment to produce nitrogen dioxide.

When & Where is it present?

Silo gases forms from a few hours to three weeks after materials are put into the silo. Nitrogen dioxide is of greatest concern as it is heavier than air, so it settles at low points in the enclosures, it can be mistaken as fog or smoke. Since the gas settles at low points, it may exit through a silo door and enter into a feed room or into the barn.

Why is it Dangerous?

When nitrogen dioxide is inhaled and comes into contact with moisture in your lungs it becomes nitric acid. This acid causes chemical burns of the airways and lungs and may lead to complete asphyxiation. Silo gas acts fast – many people inhale it and never regain consciousness; those that do regain consciousness often have permanent disabilities because of scarring of lung tissue.

Silo gas is heavier than air, quick and deadly. By the time you see it or smell it, it may be too late.

What are the symptoms of exposure?

Mild exposure can lead to coughing, burning in the throat, shortness of breath, chills, fever, nausea, or vomiting within 3 to 30 hours. Fluid buildup that occurs in the lungs after exposure can be fatal.

What can you do to prevent exposure to silo gas?

- Label silo to warn of gas hazards
- Stay out of the silo during the first three to four weeks after filling.
- Lock access to silos to keep bystanders and children out.
- If you must enter the silo, use a self-contained breathing apparatus and approved confined space entry procedures to protect yourself. Make sure the person using the device is fully trained and someone is outside the silo monitoring the entrant's progress.
- Obtain and use monitoring equipment to determine the level of nitrogen dioxide and carbon dioxide in the silo. If dangerous levels exist, do not enter the silo.
- If it is necessary to enter a silo **after** the initial 4 week period has passed, you should open all doors and vents and run the blower for at least 30 minutes as an extra precaution.